UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,077	10/30/2001	Ryo Takajitsuko	FUJI 19.117	9877

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KATTEN MUCHIN ROSENMAN LLP
575 MADISON AVENUE
NEW YORK, NY 10022-2585

EXAMINER
AHMED, SALMAN

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/020,077	TAKAJITSUKO ET AL.
	Examiner	Art Unit
	Salman Ahmed	2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>02 April 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>2-26 and 31</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) <u>3,7,10,14,18,21 and 31</u> is/are allowed.

6)☒ Claim(s) <u>2, 4-6, 8, 9, 11-13, 15-17, 19, 20 and 22-26</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>30 October 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claims 2-26 and 31 are pending.

Claims 1 and 27-30 are cancelled by the Applicant.

Claims 3, 7, 10, 14, 18, 21 and 31 are allowed.

Claims 2, 4-6, 8, 9, 11-13, 15-17, 19, 20 and 22-26 are rejected.

Claim Rejections - 35 USC § 112

1.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2.   Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 26 states "a working system". It is unclear as to what is "working system" referring to; whether it is main switch or interface or switch unit or communication apparatus? It is unclear as to what is the relationship between the "working system" and rest of the communication apparatus.

Similarly, Claim 26 states "a passive system". It is unclear as to what is "passive system" referring to; whether it is main switch or interface or switch unit or communication apparatus? It is unclear as to what is the relationship between the "passive system" and rest of the communication apparatus.

3.   Where applicant acts as his or her own lexicographer to specifically define a term

of a claim contrary to its ordinary meaning, the written description must clearly redefine

the claim term and set forth the uncommon definition so as to put one reasonably skilled

in the art on notice that the applicant intended to so redefine that claim term. Process

Control Corp. v. HydReclaim Corp., 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed.

Cir. 1999).   The term "switch unit is multiplexed" in claim 26 is used by the claim to

mean "redundant switches or active and standby switches", while the accepted meaning

is "ATIS Telecom Glossary 2000 T1.523-2001: multiplexing (MUXing): The combining of

two or more information channels onto a common transmission medium" The term is

indefinite because the specification does not clearly redefine the term.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

3.   Claims 2, 6, 9, 13, 17, 20, 23 and 24 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Sakamoto et al. (US PAT 6836479, hereinafter Sakamoto) in

view of Schneeberger (US PAT 5704047).

        In regards to claim 2 Sakamoto teaches a communications apparatus (Figure 1,

Packet Communication Device) for switching among different interfaces and comprising

a switch unit (Figure 1, core switch 101), the switch unit comprising: a main switch

(Figure 21, crossbar switch) for switching data of a fixed length (Cells); and an interface

having a first buffer (Figure 21, input buffer 121) for an input of the main switch and a

second buffer (Figure 21, output buffers 122) for an output of the main switch, wherein

the communications apparatus further comprises a processor (Figure 1, packet

distributing control unit 60, and queue selecting control unit 66) that is connected to the

switch unit and processes data according to a predetermined protocol (column 5 lines 6-

12, Packet distributing control unit 60 specifies the output interface 4 to which the input

variable length packet is to be transmitted based on the header information (protocol) of

the input packet and distributes the input packet to the corresponding queue 65. Queue

selecting control unit 66 selects one of the n queues 65 and transmits the variable

length packet queued in it to cell switch 62), the processor having a third buffer (Figure

1, queue 65) and a fourth buffer (Figure 1, queue 40) connected (column 7, 26-28,

Output interface 4 and the input interface 3 installed on the same card) to the first buffer

and the second buffer, the processor performing back pressure control, on the third

buffer (column 7 lines 5-8, Scheduler 61 always monitors whether the communication condition of output interfaces 4 is free, notifies the free condition to queue selecting control unit 66 of input interfaces 3).

Sakamoto does not explicitly teach the buffer in the input side (first buffer) of the switch applying flow control to the interface device output side buffer (third buffer).

Schneeberger in the same field of endeavor teaches the buffer in the input side (queue in SE) of the switch applying flow control to the interface device output (queue in SMU) side buffer (column 3 lines 15-25, The aim of the back pressure mechanism of the present invention is to protect the short queues in the switching elements SE of the switching network ASN against cell loss. Back pressure means that a switching element SE sends a "receive not ready" signal when the content of its queue exceeds a predefined threshold T (specifying the congested queue) to statistical multiplex unit SMU which had directly sent a cell to the congested logical queue).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sakamoto's system/method by incorporating the steps of the buffer in the input side of the switch applying flow control to the interface device output side buffer as suggested by Schneeberger. The motivation is that (as suggested by Schneeberger, column 3 lines 15-25) back pressure mechanism protects the short queues in the switching elements SE of the switching network ASN against cell loss, by switching element SE sending a "receive not ready" signal when the content of its queue exceeds a predefined threshold T (specifying the congested queue) to the statistical multiplex unit SMU which had directly sent a cell to the congested logical

queue for a time-out period and the statistical multiplex unit SMU which receives the signal will stop sending cells to the congested logical queue; thus preventing cell discard and making the system reliable.

In regards to claim 6, Sakamoto teaches back pressure control request being sent in a predetermined flow control format (column 7 line 26, internal header).

Sakamoto and Schneeberger do not explicitly teach predetermined flow control format being a cell.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sakamoto and Schneeberger's system/method by sendig a cell as a flow control request. The motivation is that (as suggested by Sakamoto, column 7 lines 33-37) it is not always necessary to provide a pin to be connected to the control line with the card so that a pair of interface 3 and interface 4 buffers need direct connection; therefore, preventing the problem that the number of pins of the card becomes short.

In regards to claim 9, Sakamoto teaches back pressure control is performed by predetermined Quality of Scrvice (QoS) class units (columns 7-8, lines 52-5).

In regards to claim 13, Sakamoto teaches back pressure control is performed in circuit units (column 8 lines 34-41).

In regards to claim 17, Sakamoto teaches the predetermined state is determined at predetermined QoS class units (columns 7-8, lines 52-5 and column 8 lines 34-41).

In regards to claim 20, Sakamoto teaches the predetermined state being determined at circuit units (columns 7-8, lines 52-5 and column 8 lines 34-41).

In regards to claim 23, Sakamoto teaches the processor (Figure 7, Queue Selecting Control Unit 20) has a local switch (Figure 7 the switch between Container switch 2 and "n" queues 21) that supplies data received from the switch unit to an internal buffer (Figure 7, "n" queues 21) corresponding to the appropriate circuit (column 10 lines 18-20, Queue selecting control unit 20 selects one of the queues 21 and transmits the packet queued in it to transmission path).

In regards to claim 24, Sakamoto teaches the processor (Figure 7, Queue Selecting Control Unit 20) has a local switch (Figure 7 the switch between Container switch 2 and "n" queues 21) equipped with a buffer (Figure 7, "n" queues 21) that temporarily stores data received from the switch unit; and the local switch itself has another local switch (Figure 7 the switch between "n" queues 21 and Queue Selecting Control Unit 20) that reads the data from tile buffer and supplies the data so read to an internal buffer (Figure 7 the internal buffer inherently associated with the switch between "n" queues 21 and Queue Selecting Control Unit 20 before transmission to circuit) of the appropriate circuit.

4.   Claims 5, 12, 16 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto et al. (US PAT 6836479, hereinafter Sakamoto) in view of Zheng (US PAT 5392280).

In regards to claim 5, Sakamoto teaches a communications apparatus (Figure 1, Packet Communication Device) for switching among different interfaces and comprising a switch unit (Figure 1, core switch 101), the switch unit comprising: a main switch

(Figure 21, crossbar switch) for switching data of a fixed length (Cells); and an interface,

having a first buffer (Figure 21, input buffer 121) for an input of the main switch and a

second buffer (Figure 21, output buffers 122) for an output of the main switch, wherein

the Communications apparatus further comprises a processor (Figure 1, packet

distributing control unit 60, and queue selecting control unit 66) that is connected to the

switch unit and processes data according to a predetermined protocol (column 5 lines 6-

12, Packet distributing control unit 60 specifies the output interface 4 to which the input

variable length packet is to be transmitted based on the header information (protocol) of

the input packet and distributes the input packet to the corresponding queue 65. Queue

selecting control unit 66 selects one of the n queues 65 and transmits the variable

length packet queued in it to cell switch 62), the processor having a third buffer (Figure

1, queue 65) and a fourth buffer (Figure 1, queue 40) connected to the first buffer and

the second buffer, the processor performing back pressure control (column 7 lines 5-8,

Scheduler 61 always monitors whether the communication condition of output interfaces

4 is free, notifies the free condition to queue selecting control unit 66 of input interfaces

3).

Sakamoto does not explicitly teach performing back pressure control on the

output (fourth) buffer when receiving a request for back pressure control from an

apparatus that is connected to the processor.

Zheng in the same field of endeavor teaches performing back pressure control

on the output buffer (any one of queues 26-30 of figure 1) when receiving a request for

back pressure control from an apparatus (Switch 12 of figure 1) that is connected to the

processor (column 6 lines 18-25, a feedback path 50 is provided from switch 12 to switch 10 utilizing the bidirectional links between switches 10 and 12. The status of buffer occupation at switch 12 is provided by a so-called F-bit which is coupled to an asynchronous transmission controller 52 which interrupts or inhibits the asynchronous transmission of data to switch 12 if there is insufficient buffer space at this downstream switch).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sakamoto's system/method by incorporating the steps of performing back pressure control on the output buffer when receiving a request for back pressure control from an apparatus that is connected to the processor as suggested by Zheng. The motivation is that (as suggested by Zheng, column 4 lines 1-5) to avoid data losses, asynchronous transmission is permitted, only when a downstream switch indicates via flow control sufficient buffer space to accommodate asynchronous transmission from an upstream switch; thus making the network reliable.

In regards to claim 12, Sakamoto teaches back pressure control is performed by predetermined Quality of Scrvice (QoS) class units (columns 7-8, lines 52-5).

In regards to claim 16, Sakamoto teaches back pressure control is performed in circuit units (column 8 lines 34-41).

In regards to claim 25, Sakamoto teaches a terminal unit (Figure 7 container 12) is provided between the processor (Figure 12, Queue Selecting Control Unit 20) and the circuits (Figure 12 transmission circuits going out denoted by the arrow on the extreme right), the terminal unit comprising: a buffer (Figure 12, "n" queues 21) provided at each

circuit; and a buffer capacity monitor (Figure 12, Queue Selecting Control Unit 20) that

monitors a capacity of the buffer and controls the buffer so as to temporarily store data

received from the switch unit (column 7 lines 16-22, output interface 4 transmits the

information to queue selecting control unit 66 of the interface 4 installed same card.

Queue selecting control unit 66 selects a queue with free condition prior and interface 3

transmits the packet queued in the selected queue).

5.   Claims 4, 8, 11, 15, 19 and 22 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Sakamoto and Schneeberger as applied to claim 2 above and further

in view of Ljungberg et al. (US PAT 5493566, hereinafter Ljungberg).

In regards to claim 4, Sakamoto and Schneeberger teaches sending flow control

messages between units as described in the rejections of claim 2 above.

Sakamoto and Schneeberger do not explicitly teach flow control message being

applied to input side buffer (first buffer) of the switch core due to predetermined state of

the output side buffer (second buffer) of the switch core.

Ljungberg in the same field of endeavor teaches a mechanism is included and

associated with the output buffers 51-53 (second buffer) for monitoring the fullness level

of those output buffers and providing a feedback signal via illustrative link 57 to

communicate with the means for controlling the throttling means 47-49 for input buffers

(first buffer) 44-46 (Figure 5 and column 5 lines 5-10).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify Sakamoto and Schneeberger's system/method by

incorporating the steps of flow control message being applied to input side buffer (first buffer) of the switch core due to predetermined state of the output side buffer (second buffer) of the switch core as suggested by Ljungberg. The motivation is that (as suggested by Schneeberger, column 3 lines 15-25) back pressure mechanism protects the short queues in the switching elements SE of the switching against cell loss, by switching element SE sending a "receive not ready" signal when the content of its queue exceeds a predefined threshold T (specifying the congested queue) to the switching elements SE input buffer which had directly sent a cell to the congested logical queue for a time-out period and the switching elements SE input buffer which receives the signal will stop sending cells to the congested output logical queue; thus preventing cell discard and making the system reliable.

In regards to claim 8, Sakamoto, Schneeberger and Ljungberg teach back pressure control request being sent in a predetermined flow control format (Sakamoto : column 7 line 26, internal header).

Sakamoto, Schneeberger and Ljungberg do not explicitly teach predetermined flow control format being a cell.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sakamoto, Schneeberger and Ljungberg's system/method by sendig a cell as a flow control request. The motivation is that (as suggested by Sakamoto, column 7 lines 33-37) it is not always necessary to provide a pin to be connected to the control line with the card so that a pair of interface 3 and

interface 4 buffers need direct connection; therefore, preventing the problem that the number of pins of the card becomes short.

In regards to claim 11, Sakamoto teaches back pressure control is performed by predetermined Quality of Scrvice (QoS) class units (columns 7-8, lines 52-5).

In regards to claim 15, Sakamoto teaches back pressure control is performed in circuit units (column 8 lines 34-41).

In regards to claim 19, Sakamoto teaches the predetermined state is determined at predetermined QoS class units (columns 7-8, lines 52-5 and column 8 lines 34-41).

In regards to claim 22, Sakamoto teaches the predetermined state being determined at circuit units (columns 7-8, lines 52-5 and column 8 lines 34-41).

Allowable Subject Matter

6.   Claims 3, 7, 10, 14, 18, 21 and 31 are allowed.

7.   Claim 26 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Response to Arguments

8.   Applicant's arguments see pages 9-11 of the Remarks section, filed 4/2/2007, with respect to the rejections of claims have been fully considered. Upon further review and updated search, the allowability of independent claims 2 and 5, and their respective

dependent claims have been withdrawn. A new ground of rejections for claims 2, 4-6, 8,

9, 11-13, 15-17, 19, 20 and 22-26 has been presented in this office action. As such any

response to arguments of the Applicant is moot.

Conclusion

9.　　　Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Salman Ahmed whose telephone number is (571) 272-

8307. The examiner can normally be reached on 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SA
Salman Ahmed
Patent Examiner
5/31/2007

HASSAN KIZOU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600